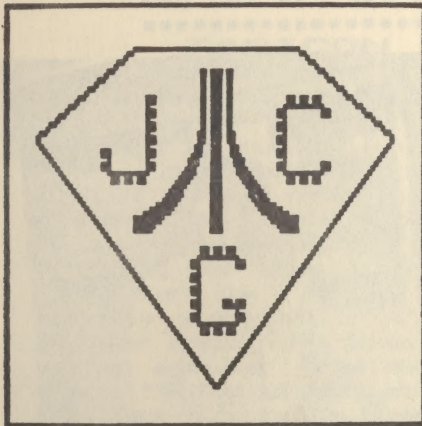




JACG JACG

NEWSLETTER
Vol. 4 No. 1

Sep. 1984

Single Copy

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THE JERSEY ATARI COMPUTER GROUP

From the Editor's Desk...

This edition of the newsletter marks the beginning of Volume 4. That means we have officially published 48 previous issues. For a personal computer user group that is a real benchmark. Things move so fast in this electronics world that four years of anything represents tremendous evolution. We thank those of you who have helped our group grow to the magnitude and sensitivity it has.

Unquestionably the key person responsible for the health enjoyed by JACG is Dick Kushner. He was one of our founding fathers, he showed the way as editor of the first newsletters, and has given us sage advice and firm direction as our president. He ends his tenure next month, earning a well-deserved respite from the almost daily demands of overseeing such a large organization. We have grown from a handful to over 550 active members. Thankfully, Dick has agreed to remain on the Executive Committee for one year as an ex officio member sharing with his successor the tricks he has acquired over the years.

Those of us who have gotten to know Dick on a personal basis will let you know he is a warm and caring person. He not only is there when you need him, I have often found him anticipating my needs before I knew I had them. Dick is, by the way, a research scientist with Bell Telephone Laboratories and holds a Ph.D. in Chemical Engineering among his other not small accomplishments. His latest effort, Basic Atari BASIC, a text written with James Coan is, in my opinion, the current definitive work on learning the workings of the Atari computer.

It would be impossible to catalog the things Dick has done for us. Such a list would be long and impressive. There is no way to repay someone for having generously dedicated so much of himself to our benefit except to say "Thanks, Dick. We really appreciate it."

Ed. note: Okay, Kushner, see you at the next Exec. Comm. meeting. Don't forget your report.

Frank Pazel
Editor-in-Chief, JACG Newsletter

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MARK YOUR CALENDARS!!

JACG Meeting Schedule

October 13, 1984
November 10, 1984
December 8, 1984
January 12, 1985

AND NOW A WORD FROM THE PRESIDENT....

Just when we thought Atari was dead and gone, things start to get exciting again. We have, of course, the recent purchase of Atari by Jack Tramiel (formerly of Commodore). We also have the upcoming national Atari convention (**TARICON**) in Michigan. And we have the upcoming change of leadership for **JACG**. All of these things will breathe a new breath of fresh air into Atari in general and **JACG** in particular. My excitement multiplies because I have just has an executive committee meeting and I am once again uplifted by the terrific caliber of people who make up the **JACG** board.

By the way, you may have noticed the interesting printing used in this column this month. That is the result of my using a **MacIntosh** with **MacWriter** to prepare this. This is a very exciting machine that permits the screen to show exactly what the printer will print. This includes on-screen display of all the different fonts that you see here, and many more. Since I like to do word processing, I find this a fascinating concept. This does not mean that I will be abandoning Atari. I still have lots of use for my old 800. It just means that I like to tinker and the **MacIntosh** is an opportunity to tinker with something that represents the "next generation".

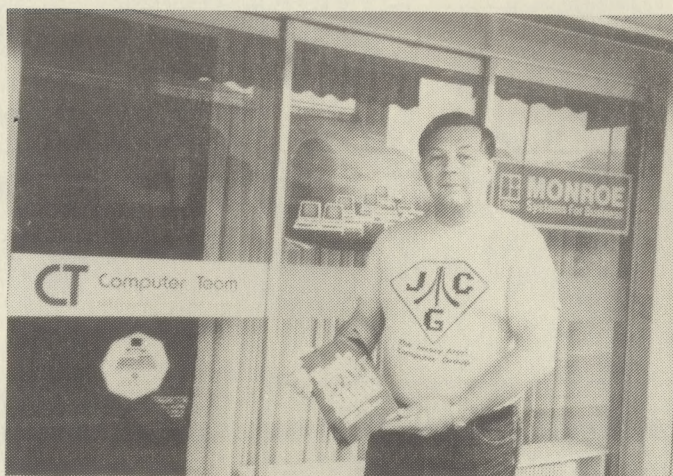
The executive committee will present a proposed slate of officers and accept other nominations from the floor at the September meeting, with elections to be held at the October meeting. It will be up to the new Executive Board to fill any vacancies among the officers that are appointed. Based on our current thinking, we should have a terrific group of leaders to carry **JACG** through the coming year. I look forward to serving the new board in an advisory position for the next year.

Speaking of **TARICON**, things are full speed ahead. In fact, by the time you read this the convention will have been held and I expect there will be a report by me in this very newsletter (if I can get the editor to hold some space until the last minute!). I look forward to representing **JACG** at this most important meeting of Atari people. We ought to have a clearer picture of the future by the time I leave Michigan.

Remember, **JACG** elections will be held in October. Now is the time to get involved for the coming year. Whatever the fate of Atari, **JACG** will get bigger and better.

Richard Kushner, JACG President

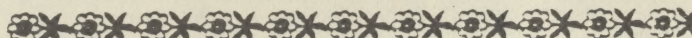
Just How Far Can You Go?



Pictured above is newsletter editor, Frank Pazel, proudly wearing his new **JACG** t-shirt and displaying Dick Kushner's Basic Atari while vacationing in St. Moritz, Switzerland. Now that's pride and dedication!

How about some pictures of you wearing your new **JACG** t-shirt in some far flung and exotic place, like the Delaware Water Gap. Just how far away are you willing to haul this piece of clothing and wear it to proclaim your loyalty to **JACG**? You send 'em in and we'll publish them.

What's that? You say you don't have a **JACG** t-shirt! After all the publicity and hard work by Mike Murphy to put this fund raising project together! Get yourself to the lobby and get yours for only five bucks. Sizes from small to extra large, colors are red or blue with black printing, quantities limited. Go for it.



1984-85 Slate of Officers

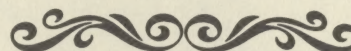
The following slate of officers is presented for your consideration. Nominations are still open up to the October meeting when the election will take place. Anyone wishing to place his/her name on the ballot should contact a current officer by the October meeting.

President: Arthur Leyenberger

Vice President: Scott Brause

Treasurer: Ron Kordos

Secretary: Larry Moriano



TARICON '84

or... Getting There Is Half The Fun
By Richard Kushner - JACG

I thought it would be fun to write this first paragraph before departing for TARICON to see how what I'm looking forward to jives with what actually occurs. I am definitely looking forward to going to this get together. It is a first for the Atari community (and possibly a last?). I've been to the Consumer Electronics Show, so I know how big a computer show can be. I don't expect TARICON to approach the scale of CES, but I certainly hope it is more than three card tables full of used software! More than anything else, I hope that the Atari user group community can get itself organized so that effective communication between groups can be firmly established. With corporate Atari as a large unknown, we need to keep in touch with other groups even more than in the past. And now.... on to the show!!!

Remember the last time you drove all night to get somewhere? Remember the terrible taste in your mouth when you got there? Your intrepid JACG contingent to TARICON (Art Leyenberger, Scott Brause and this author) did just that the weekend of August 25th. Was it worth it? Would we do it again? YES! The Michigan Atari Computer Enthusiasts (MACE) and the Capitol Hill Atari Owners Society (CHAOS) of Lansing, Michigan are to be congratulated for pulling off the first ever Atari convention. And JACG deserves a pat on its own back for being the largest (by far) financial supporter of all the other user groups. We recognized the real value of TARICON as an event, both physical and psychological.

Getting there is half the fun..... We drove all night on Thursday to get to Michigan (13.5 hours). Memories along the way.... passing and being passed about six times by a truck hauling the very large speedboat "Smokey and the Bandit" ... trucks, all going very fast, everywhere ... indigestion from choosing the wrong restaurant in Pennsylvania ... Scott learning to drive a stick shift at 1AM ... candy bars and soda at 5AM on the Ohio Turnpike ... 13 hours of humor and talk (when not sleeping) ... trying to be sure that the sleeping occurred when not driving ...

On to the show itself.... There were about 20 exhibitors, including OSS (makers of ACTION, BASIC XL, etc.) I mention OSS because they were the only national software maker to be present. Three cheers to Bill Wilkinson and OSS and boos to those who made excuses rather than appearances. There were talks and discussion groups both Saturday and Sunday on such diverse topics as 3-D Graphics and ACTION. Most importantly, the user groups present (about 14) had the opportunity to get together and discuss their mutual futures and their connection to Atari. Out of this came the formation of Atari

User Groups International (AUGI), a federation of all interested, active Atari user groups, whose goal is to communicate as a single voice with Atari and to foster communication among the groups themselves. As individual groups we have always been thwarted in our efforts to reach those at the old Atari who were in a position to make decisions. Instead we got only the sympathetic, but powerless ear of User Group Support. By speaking to Atari as one voice on issues that we agree are of major importance, we hope to reach the ear of someone empowered to act. If for no other reason, the formation of this federation makes our trip worthwhile.

You may have noticed that I never mentioned the Atari display and presence at TARICON. That is because they were not there. Please read the accompanying article on my opinions about that. Suffice it to say here that Atari blew it by not attending.

Getting home is half the fun.... more random memories ... thanks to Dennis Kushler, our former V.P., for putting us up at his home in Michigan ... driving all day on Sunday to get home ... sunrise over fog shrouded valleys ... teaching Scott to drive a stick shift again ... the awful traffic of Allentown, PA ... home at last...

Final thoughts.... The show itself was a big disappointment, both because of its small size and the absence of Atari. Please let all software and hardware manufacturers you come in contact with know that you are upset by their failure to appear. I am convinced that MACE and CHAOS did all that was in their power to get more distributors to come. Because of their efforts, the next TARICON will be bigger and better. Anyone in JACG want to organize TARICON '85 for our area?

JACG

Writing For The JACG Newsletter *****

Articles should be submitted to the Editor by the 20th of the month for inclusion in the next issue. Submissions preferred on disk, using LJK Letter Perfect or Atari Writer. Font style should be Elite or Proportional with right hand justification. If hard copy is submitted the final printed width should be 4-1/4 inches from left margin to right margin. All formats will be considered including hand written documents if first arranged with the Editor.

We want to encourage everyone to voice his/her thoughts, knowledge, and opinions. Writing will be modified at the discretion of the Editor. No piece will be knowingly altered out of original intent.

GIVE A BIT!!!

Contribute to the Newsletter this month.

Art's Arcade

By Arthur Leyenberger - JACG

Copyright (c) 1984 by Arthur Leyenberger

Mario Brothers by Atari

Mario first appeared in Donkey Kong. In this game the little fellow tried to rescue his girl friend from the clutches of Kong. Next we saw Mario in Donkey Kong Jr., with the help of his brother Luigi, trying to keep Kong caged much to the dismay of Kong Jr.

Now Mario and Luigi have formed a plumbing company and their first task is to clear out a set of pipes that open into a series of landings which form the game screen. The pipes are clogged with Shellcreepers (turtles), Sidesteppers (crabs), Fighterflies (huge houseflies) and Slipices (mobile ice cubes). Doing away with these assorted crawling and hopping pests forms the structure of the game.

Mario must locate himself directly beneath a pest which is on the floor above and jump up, striking his head against the floor. If the timing is right, the pest will be flipped onto its back. Then Mario takes a running leap onto that level and kicks the creature into the water below to score points.

The first level consists only of the slow shellcreepers. It is rather easy to bump and kick the unsuspecting pests and rack up the points. On the next level the Sidesteppers present a more difficult challenge: they must be bumped twice in order to flip them over. If Mario touches any of the creatures or does not kick them off of the floor in time the critters' deadly touch will kill our hero.

On the third screen the Fighterflies hop across the floors and also require two bumps to incapacitate them. Timing is crucial because they can only be bumped when they are actually on the floor. Slipices appear on the next screen. When the little ice cubes first appear Mario can destroy them simply by walking over them. Otherwise they melt, making the entire floor slippery and more difficult to travel on.

After four screens of individual pests, the remainder of the game consists of multiple pests in increasing numbers on one screen. The action does get rather hectic and more challenging.

The first few times I played Mario Brothers I was a little dissatisfied. I thought the game was good but I did not think it had staying power. Then I started playing the two-player version of the game. Here one player maneuvers Mario and the other player maneuvers Luigi.

Mario Brothers with two players is, as Tony the Tiger used to say, "ggrreeaatt!". You can either compete against or cooperate with your opponent, which adds quite a bit of excitement to the game. If you are looking for something to do with your kid brother,

challenge him to a game of Mario Brothers. Then if you are good, you can beat his pants off and not get in trouble from Mom.

Star League Baseball

Baseball season. I'm at Gamestar Stadium. Looking through the official souvenir program I first check the scouting report. I can choose from three starting pitchers. "Heat" Muldoon has an overwhelming fast ball, a good screwball and slider. However, he tires easily when throwing the fast ball and has a tendency to miss the strike zone when he goes for the corners. "Curves" Cassidy has an incredible sinker and great curve ball. His excellent control and stamina make him the most balanced pitcher in the league. Then there is "Knuckles" Flanagan. He has the liveliest knuckleball this side of the Rockies. Although he has good control and stamina, I think I will save him for relief duty.

I can play against the computer (tough competition) or another opponent. I think I will try the computer again. I am getting better, I lost the last game by only nine runs. Let's see, I will forgo the batting practice and start the game. All rise for the National Anthem.

My team takes the field with "Heat" on the mound. The main screen is a view from high in the right field stands. This provides a good 3-D perspective of the field and the balls shadow enhances the effect. I look around and see packed bleachers, dugouts and players ready for the contest.

Batter up! The game's simple control system makes it easy for me to pitch, field flies and grounders and even pick off base runners. Regardless of who has the ball, I can throw the ball by pointing my joystick as if I was on the pitcher's mound. I push right for second base, up for third, and so on. To lessen the confusion, the player with the ball turns black.

It looks like the batter is ready. A few nervous check swings signal me that it is time for the first pitch of the game. Pressing the joystick button down causes the pitcher to take his position and peer at the catcher as if waiting for the sign. Moving the stick in one of eight directions chooses the type of pitch. If I wanted to pick off a base runner, I would release the button and point to the appropriate infielder. There's the pitch, a swing and a miss. Strike one. Next I throw a change up pitch outside of the strike zone but the computer batter is not fooled. Good eye!

The batter can either check swing, bunt or swing away. Timing is critical. The pitch and timing control the ball's trajectory when hit. When the ball is hit, a cracking sound is heard and the runner automatically runs to first base. After that, joystick control moves the lead runner and all others follow.

There are quite a few nice touches to

Gamestars Baseball which make it a polished simulation. In addition to the shadow cue, the crowd cheers and music plays when tension builds and when bases are loaded. The scoreboard is seen between innings, displaying information like paid attendance, sports trivia questions and other major league scores. When a runner threatens to score, the call of "charge" is heard.

Star League Baseball is loads of fun, especially when playing another human opponent. Stealing bases takes practice but with two evenly matched players it adds to the fun. I have gotten myself into more than one pickle trying to go for that extra base. I have yet to beat the computer team but I am getting better. I lost my very first game with a score of 65 to 1.

The control system is easy to use and sound and graphics are used to enhance the game play. All in all, Star League Baseball ranks as the most playable and enjoyable computer baseball game. Now, if I could just catch the attention of the vendor and get another hot dog.

The Final Legacy by Atari

Nuclear war is a constant threat to our modern life. It seems that everyone is concerned about it these days. Such television and motion picture features as "The Day After" and "War Games" attest to that. If there is a nuclear holocaust, chances are that it will be started and ended under the control of computers. But what if, in their process of rebuilding, the survivors of the devastation discover that the war computers are still on and that another attack is imminent.

This is the scenario for The Final Legacy, Atari's new computer game. You are onboard and control a modern ship containing various offensive and defensive weapons. Torpedoes are used against other ships, sea-to-land missiles are used to destroy enemy missile silos and sea-to-air missiles are used to destroy incoming missiles to protect your few remaining cities.

One of four different graphic screens are used for the game play depending upon what mode you have selected. Each screen requires different skills and has different action. First is the navigation screen. This looks a lot like the big electronic world map seen in the movie War Games. The map shows your ships position, the location of almost all of the enemy missile bases and the deployment of enemy ships. Your current position and firing range are indicated by a circle with a black dot in the middle. Enemy ships are indicated by white dots.

The joystick is used to maneuver your ship into range of the enemy. If you choose to do battle with enemy ships, the display changes to a view off of your bow. In this sea-battle mode, the percent of damage your ship

currently has is displayed at the bottom of the screen. There are war ships, hunters and intelligence ships to be destroyed. You scroll left and right, forward and backward to line of the enemy and then fire your torpedoes. Destroying a war ship will reduce your damage by six percent. Destroying an intelligence ship will display additional enemy missile silos on the map screen. While you are busy firing at the enemy, he is also lobbing shells at you. Your only defense is to take aversive action.

Another part of the game is the sea-to-land screen. After taking your ship within range of a missile base and switching to this mode you are presented with a scanner that lets you track the targets. You target the missile bases by scrolling in all directions and then blast them with your powerful E-Beam.

As soon as you open fire the missile base launches its full salvo against your cities so you will have to polish off the bases fast then switch to the sea-to-air mode. Here you have a Star Raider type of view of incoming enemy missiles that must be destroyed. Warning alarms sound as you line up the targets. A keen eye and a fast joystick are required if you are to save your cities.

There are a wide variety of skills levels that can be played in Legacy. Six in all, from Ensign to Fleet Admiral. This ensures that both beginners and experts alike can play and enjoy this game. Of all the games for the Atari computer, only Star Raider comes close in offering the mix of battle strategy, arcade playing skills and polished graphics.

I thoroughly enjoy playing The Final Legacy and predict that it will become another Atari classic. I look forward to more games of this caliber from Atari.

JACG ANALOGgers

The October 1984 issue of ANALOG magazine features the premier appearance of a new column, "Ask Mr. Forth." All of us around here know there is only one such person and now the whole world knows it. Our own Donald Forbes now is the author of this timely column dealing with the intricacies and joys of programming in FORTH. The prolific Mr. Forbes keeps our newsletter supplied with many column-inches of information every year and he assures us this situation will continue. Good luck, Donald, and congratulations!

As mentioned in last month's newsletter, Arthur Leyenberger is now the East Coast Editor of ANALOG and is looking out for our interests. Those interests appear in a large half-tone shaded announcement of our bulletin board update with our phone number in 3/8 inch high letters. If there was any doubt about the need for an exclusive JACG access phone line that announcement should have eliminated it.

Turn your Atari into a Ferrari.

Introducing the all-new 1984 Indus GT™ disk drive. The most advanced, most complete, most handsome disk drive in the world.

A flick of its "Power" switch can turn your Atari into a Ferrari.

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The Indus GT is only 2.65" high. But under its front-loading front end is slimline engineering with a distinctive European-Gran flair.

Touch its LED-lit CommandPost™ function control AccuTouch™ buttons. Marvel at how responsive it makes every Atari home computer.

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Nestled into its soundproofed chassis is the quietest and most powerful disk drive power system money can buy. At top speed, it's virtually unheard. Whisper quiet.

Flat out, the GT will drive your Atari track-to-track 0-39 in less than one second. And when you shift into SynchroMesh DataTransfer™ you'll increase your Atari's baud rate an incredible 400%. (Faster than any other Atari system drive.)

And, included as standard equipment, each comes with the exclusive GT DrivingSystem™ of

software programs. World-class word processing is a breeze with the GT Estate WordProcessor™. And your dealer will describe the two additional programs that allow GT owners to accelerate their computer driving skills.

Also, the 1984 Indus GT is covered with the GT PortaCase™. A stylish case that conveniently doubles as a 80-disk storage file.

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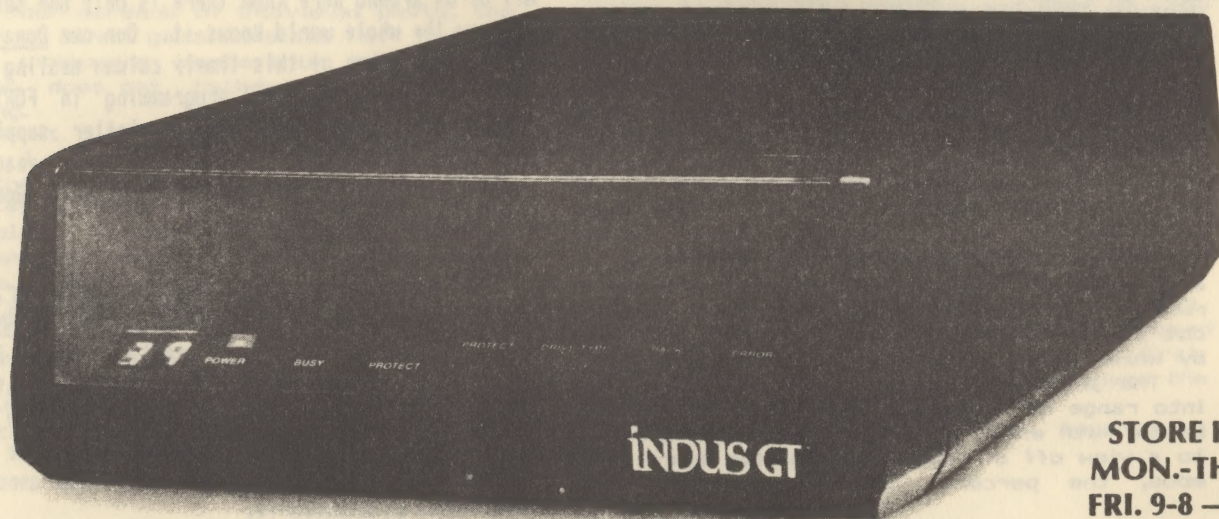
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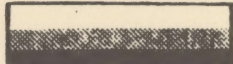
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TELECOM

By Lawrence Moriano - JACG

Before I start my column this month, I would like some input on the topics that you would like me to write about in the future. All ideas and suggestions are welcomed. My knowledge of telecommunications is growing because of my deep interest in this field of computers. If there is a subject that I have limited knowledge about, I am willing to research your request to come up with the proper answer.

Now I will go on with my discussion of CompuServe. The Consumer Information Service is the first menu you will see when you are online. It is divided up into the following categories.

1. Home Services
2. Business & Financial
3. Personal Computing
4. Services for Professionals
5. User Information
6. Index

Each main category is divided into many subcategories, which will be discussed individually.

Home Services is the fastest growing and most popular category for most home users. The menu for Home Services is divided into ten sections.

1. News/Weather/Sports
2. Reference Library
3. Communications
4. Home Shopping/Banking
5. Discussion Forums
6. Games
7. Education
8. Home Management
9. Travel
10. Entertainment

Each category has many special features which are too numerous to explain, so I will give you an overview of the many things you can do in Home Services.

1. You can calculate the cost of a new car in Home Management.
2. Make your hotel and airline reservations from the comfort of your home in the Travel section.
3. Students of all ages will greatly appreciate the Reference Library.
4. If you are having a hard time on deciding what to buy your husband/wife for a birthday gift, then the Shop at Home feature will really come in handy.
5. Are you in the mood for a group discussion on almost any topic you can think of, but there is no one around to talk to? Your problem can be solved when you enter the Discussion Forum.
6. There are up-to-the-minute weather, news and sports reports at your finger tips.
7. If you are looking for a new game to play on your computer, you will enjoy the Entertainment section.

I have briefly discussed the many items of interest in Home Services, and as you can easily see, most people will find this section of CompuServe to be very useful.

If you are a business person who needs a quick retrieval of stock market data as well as company reports, then the CompuServe Business And Financial Services section is what you have been looking for. This section is divided into eight categories.

1. News & Financial Analysis
2. Investments & Quotations
3. Career Planing
4. Brokerage & Banking
5. Reference Library
6. Discussion Forums
7. Travel Services
8. Personal Finance

I will highlight the main features in this section with a brief description of each category.

1. You can send an electronic mail message to anyone who is a subscriber of CompuServe.

2. Does the idea of banking at home interest you? Would you like to pay your bills while you are online? Do you need to know how much money is remaining in your checking account? If you answer yes to any of these questions, than you can not live without the Banking section.

3. Do you need up to the minute stock quotations? Do you want information on a company's history before buying any stock? If this type of information is important to you, then Financial Analysis is what you need to make your life a lot easier.

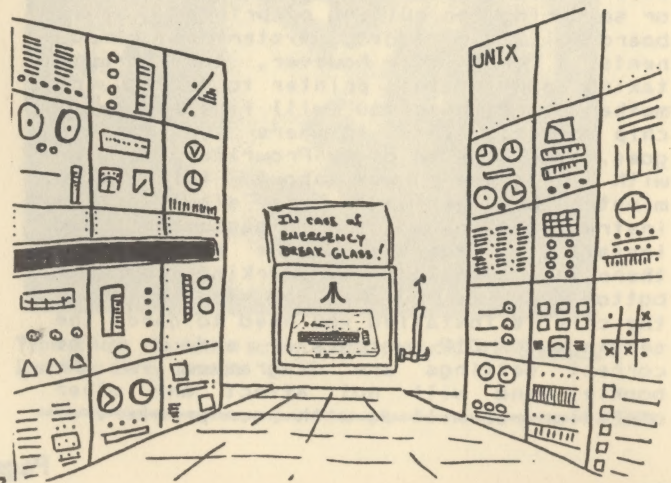
4. You can purchase a new item for your computer without leaving your home by shopping at the Com-U-Store.

5. If you are thinking about making a career change, then the Career Planing section will help you make your decision much easier.

To fully appreciate the the unlimited benefits of the Business & Financial section, you must get online and see for yourself.

Next month I will continue my discussion on CompuServe. Before I leave you, don't forget to contribute to our news letter. Two hours a month is all you need.

UNTIL NEXT TIME
HAPPY TELECOMMUNICATING



Pro*Plus For Your Prowriter by Frank Pazel - JACG

Have you been irked by your non-computerized friends' comments about the lack of quality of your printer's output? Have they said, "Well, that's very nice, but it sure doesn't look like it was done on a typewriter, does it?" Have you wished that you could do something to show them that the Atari can produce not only letter quality print but is capable of generating any kind of special characters anyone might want? Your frustrations are over.

A hardware/software package for your Atari Prowriter called Pro*Plus will do all of the above, and more. By adding a ram chip to the Prowriter and addressing it with the included software you can download any compatible character set to the printer. You then use any word processor, database, spreadsheet, list files, etc. just as you would with the resident sets. Character sets are included in the software and you can create any font you want using a standard font generator such as Instedit, Fontedit, Superfont, etc. There are many custom fonts used in adventure programs which can be transferred for use with Pro*Plus. As long as the file is in BASIC and was generated by a standard character set generator it will probably work perfectly with this program.

In addition to adding this tremendous potential to your system Pro*Plus brings you two additional bonuses. A graphics dump called Grafdump is included which will print a full hi-res screen horizontally in about thirty seconds. The addition of the included ramchip expands the memory buffer of your printer by at least .5K. Either of these secondary features, by themselves, would be worth the paltry package price of \$19.95.

The Pro*Plus package arrives with a neatly packed chip, a single disk, and a twelve page, highly detailed instruction booklet. The installation of the chip is not for the nervous or inexperienced although I have little doubt that anyone with a modicum of intelligence could do it by following the step-by-step instructions. If you feel uncomfortable disassembling a piece of electronic equipment you can relegate this task to a competent friend or electronics technician. There is no wiring or soldering, no cutting of printed circuit board foil, no adding mysterious components. There is, however, considerable taking apart of the printer to get to the mother board where you will find an empty chip socket. This is where the ramchip goes. The time to do my Prowriter, working with a partner, was about thirty-five minutes but we went very slowly. The instructions have you disassemble and install from the top of the printer but there is a technique for working from the bottom which is quicker and simpler. Once the chip is installed you need to check the settings on DIP switches 1 and 2. The correct settings are diagrammed in the booklet and will not affect any other operation you will do with your printer.

The disk is unprotected and the author suggests you back it up before doing anything else. You also need to add your version of DOS which supports AUTORUN.SYS. OS/A+ does not support DOS. Adding Pro*Plus to double density disks is detailed in the instruction booklet. Booting the disk requires BASIC and 48K. Atari BASIC or BASIC XL will handle Pro*Plus on all computers, including the new XL series.

You are greeted by a menu screen with options for Pro*Plus or Grafdump. Both programs are practically self-documenting and are the best trapped and error-free works I have seen in a long time. Entering Pro*Plus you have four options. You can 1) Convert a character set, 2) Download a character set, 3) Check the disk directory, or 4) Quit back to the main menu.

Converting a character set presumes you have a file which contains the data generated by a standard character set generator, such as Superfont. It contains no header information, just the 1024 bytes of information necessary for a full character set. Pressing the 1 key brings you prompts which will walk you through a very simple procedure for converting the file to a Pro*Plus Download file, necessary for formatting the Prowriter ram with the new font. The newly generated file will be saved to disk and will automatically be appended with the extender .DNL which is needed for recognition by the software.

Downloading a file to the printer is child's play. Select option 2 from the main menu, type in the name of the character set minus the extender, press RETURN and the magic begins. After a few turns of the drive the printhead shivers and your new "resident font" is waiting to respond to any normal Atari commands. If you choose to download a font immediately after the conversion process the new font will be automatically loaded into the printer. This is a nice feature since most of us will want to check the printout of our new font right away. There is an even neater way to download a font which I will get to later on.

Option 3 from the menu lets you check the disk directory in a very convenient manner. It has sub-options which allow you to look at only files with font extenders (.FNT), only download extenders (.DNL), the entire directory, or echo the listing to the printer. Again, considerable thought has gone into designing menu structures and trapping to make using this program very comfortable.

Suppose you are about to use your favorite word processing program and would like to print out the results in one of the new fonts you just designed. No need to load Pro*Plus to format the printer. Simply load DOS, select option C, and enter the entire name of the file you want to go to the printer followed by a comma and the printer code (e.g. CURSIVE.DNL,P:). Press the RETURN key and the drive comes on, loads the file temporarily into RAM, and then sends it with the strangest Bronx

cheer sound you've ever heard to the new ramchip in the Pro. The printhead does not quiver the way we are used to when sending CHR\$ commands but the job is done. Total time, less than a second.

A really great feature of this software/prINTER combination is the ability to toggle back and forth between the three resident character sets in the printer and the new set you have loaded into RAM. Because of a technical incompatibility you can not use the proportional set when the downloaded set is enabled. Suppose your custom set contains special math symbols. Download your custom set to the printer. Send an ESC \$ (CHR\$ 27;CHR\$ 36) to the printer. This will return the Prowriter temporarily to normal operation. Load the word processor and use it normally until you get to the point of inserting your special symbols. Inside the text send an ESC ' (CHR\$ 27;CHR\$ 39) and the printer automatically switches to the special character set. After your special printing an ESC \$ (CHR\$ 27;CHR\$ 36) will re-enable the Prowriter to normal operation. Here are some examples of printing special math symbols:

$\int \Sigma x dx$ 1234567890 $\bar{x}$ $\bar{y}$

$\Sigma bc = \bar{x}^2$ if $\bar{y}^5 \neq z$

$A\bar{x} = Jx dA$

This is an extremely powerful feature, allowing an almost limitless use of special characters and symbols. The only constraint will be the user's ability to design within the eight by eight matrix pattern of the character set generator. Incidentally, the clear screen character (CHR\$ 125) now prints like this $\bar{x}$ when you list your program to the printer.

Returning to the main menu choose option 2 to load the GrafDump program. Initialization takes about fifteen seconds. Any Graphics 8 or 7.5 picture file with standard 62 sector, single density format can be sent to your printer in a very short time, usually under 30 seconds. The finished print is in high resolution and horizontal on the paper in the 1/4 and 1/2 page format, a feature many other screen dumps don't offer. You can elect a positive or negative image, boldface or normal intensity, and size of finished print to be one-quarter, one-half, or full page. Again, trapping is excellent with easy-out responses in case of failure. Once the picture is printed you have the option to return to the previous or main menu, depending on what you want to do next. Incidentally, GrafDump will work with any Prowriter, with or without the added ramchip and many people would buy this part of the program just for its fidelity and speed.

Pro*Plus is the brainchild of Mike Yocum, a young industrial engineer from Peoria, Illinois. Like most good programs, it developed as he felt a need to be able to expand the capabilities of the already excellent Atari word processing system. He succeeded admirably in meeting those needs and sharing his work with us. There is

only one thing wrong with Pro*Plus. The twenty dollar price tag is way too low. You better hurry up and buy it before Mike catches on.

This is the STANDARD FONT.

ABCDEF GHIJ KLMNOPQRSTU VWXYZ 1234567890(<) abcdefghijkl

ABCDEF GHIJ KLMNOPQRSTU VWXYZ

This is the CURSIVE FONT.

ABCDEF GHIJ KLMNOPQRSTU VWXYZ 1234567890(<) abcdefghijkl

ABCDEF GHIJ KLMNOPQRSTU VWXYZ

This is the FUNNY FONT.

ABCDEF GHIJ KLMNOPQRSTU VWXYZ 1234567890(<) abcdefghijkl

ABCDEF GHIJ KLMNOPQRSTU VWXYZ

This is the OUTLINED FONT.

ABCDEF GHIJ KLMNOPQRSTU VWXYZ 1234567890(<) abcdefghijkl

ABCDEF GHIJ KLMNOPQRSTU VWXYZ

This is the SPACE FONT.

ABCDEF GHIJ KLMNOPQRSTU VWXYZ 1234567890(<) abcdefghijkl

ABCDEF GHIJ KLMNOPQRSTU VWXYZ

This is the ROMAN FONT.

ABCDEF GHIJ KLMNOPQRSTU VWXYZ 1234567890(<) abcdefghijkl

ABCDEF GHIJ KLMNOPQRSTU VWXYZ

This is the OLD ENGLISH FONT.

ABCDEF GHIJ KLMNOPQRSTU VWXYZ 1234567890(<) abcdefghijkl

ABCDEF GHIJ KLMNOPQRSTU VWXYZ

This is the ITALICS FONT.

ABCDEF GHIJ KLMNOPQRSTU VWXYZ 1234567890(<) abcdefghijkl

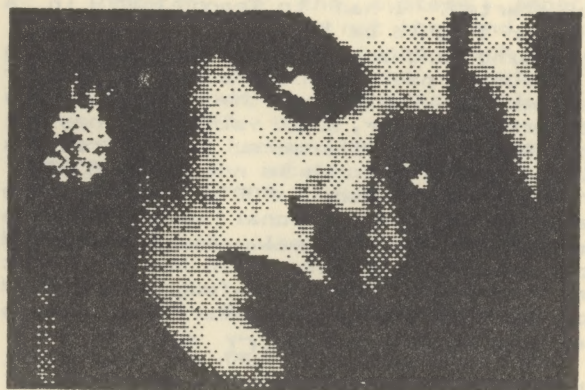
ABCDEF GHIJ KLMNOPQRSTU VWXYZ

This is the STRIPES FONT.

ABCDEF GHIJ KLMNOPQRSTU VWXYZ 1234567890(<) abcdefghijkl

ABCDEF GHIJ KLMNOPQRSTU VWXYZ

Some of the more than twenty fonts the author has available to download to the Prowriter printer via the Pro*Plus program.



Typical high resolution screen dumps produced with GrafDump in less than thirty seconds.

FORTH: A RACE AGAINST THE CLOCK

by Donald Forbes - JACG

Have you ever felt you were running out of time? That's what happened to me when I found out to my surprise (and the surprise of Atari chairman Jim Morgan) that as of Independence Day bald-headed Jack Tramiel now owned Atari. My question: how much is the Atari 800 (which I bought in January 1982), the Atari 810 disk drive, and the Atari 850 interface unit worth to me today?

Before I bought the Atari, I asked my son, who was in the Exxon scout computer orientation program, to inquire of the gurus what micro to buy, and the answer came back: "They will all be obsolete in four years." I had to assume they were probably right. I bought the Atari with my eyes open--a temporary means to learn computer hardware and systems programming on my own time and at my own pace.

The 800 was a dream machine--and still is--but BASIC (or Beginner's All Purpose Symbolic Instruction Code) for me was a big step backward, having fought my way through IBM assembler language and COBOL (a wordy language for mathematical illiterates) and then FORTRAN (wonderful for math and a horror for writing reports). When PL/I arrived I latched on right away--I was probably the first PL/I programmer in downtown Manhattan. PL/I had string handling and all the benefits of COBOL and FORTRAN without the headaches of either.

When the structured programming revolution hit, PL/I adapted--but COBOL, FORTH and BASIC (with their spaghetti code GO TOs) now belonged to the dim past. Then I gained access to SAS (Statistical Analysis System) with its PL/I interface, its graphics and its data handling facilities. Now I could take an IBM mainframe and through TSO do anything I wanted.

When I discovered FORTH in September of 1982 it was like a dream come true. Here was a structured high level language with assembler capabilities that I imagined would give me main frame capabilities on my own little computer with its unique and peerless graphics. There would be only one software interface, instead of the dozens that I had been forced to cope with over the years. Most importantly, FORTH would be portable across all the micros in use today or tomorrow.

That was when the race against the clock started. I had to learn FORTH in a hurry, or I would be left without a personal programming language. I invested heavily in the valFORTH packages. There is no better investment in FORTH for the Atari. I soon discovered, however, that valFORTH does not teach FORTH. Furthermore, Leo Brodie's tutorial Starting Forth is not Atari FORTH.

The JACG Atari FORTH disks are unbeatable as instructional aids, but the documentation is minimal. At the FORTH chapter meetings at Rutgers in New Brunswick I met at least four knowledgeable FORTH practitioners, but to them Atari was just a toy.

The clock was still running. Atari kept on losing money month after month. I felt I had to master FORTH before Atari folded. Luckily Forthers Henry Laxen and Mike Perry came up with a 1983 standard FORTH for the IBM PC in the public domain for a mere \$25. (All I have to do is stay late in the office at the end of the day.)

Another stroke of luck came when my friend Mike Mintz said: "Do you have a copy of the Systems Guide to fig-Forth? It is really worth the \$25." (The author is Dr. C. H. Ting and Mountain View Press carries it. Ting also has an article in the last issue of Forth Dimensions which expands and clarifies many of the points he raises.)

Ting's book was a turning point. It soon became clear that FORTH must be regarded, not as a language or operating system, but a complete software interface between the user (with his hardware) on the one hand, and the computational and graphical and mathematical algorithms that he must invoke to solve his problem on the other.

Any software interface (including FORTH) comprises four layers: (1) the applications layer with the user's applications programs, (2) the development layer consisting of a language (corresponding to BASIC and an editor and debugging routines), (3) the systems layer (corresponding to the assembler utilities in an IBM mainframe), and (4) finally the assembler or machine language layer which is the only language the computer understands.

Almost every book on FORTH is devoted to the development layer for a particular type of hardware, with perhaps a few examples at the applications layer. You can learn about the assembler layer (and how FORTH is constructed) from Bill Ragsdale's fig-FORTH Installation Manual and his description of the FORTH assembler in the Jan 1982 issue of Forth Dimensions. What about the systems layer?

"Most of the published materials on FORTH," as Ting puts it, "are manuals which teach how to use a particular FORTH implementation on a particular computer. Very few deal with the inner mechanisms on how the FORTH system operates which is essential to the understanding and effective utilization of the FORTH language. My intention here is to describe how the FORTH system does all these wonderful things no other language can. With a deeper understanding of the inner mechanism, a user can have a better appreciation of many unique features which make FORTH such a powerful programming tool...A book on the systems aspect in the fig-FORTH Model can help programmers to climb the learning curve and ease somewhat the pain in learning this very strange language."

The layers within the FORTH systems software, according to Ting, are: (1) the text interpreter, (2) the compiler, (3) the error handler, (4) terminal input and output, (5) number conversions, (6) the dictionary, (7) virtual memory on disk, (8) words that define other words, (9) control structures, and (10) the editor. Ting also covers two of the assembly language layers: the address (or inner or machine code) interpreter and the assembler.

The JACG FORTH disks 19 and 20 are a godsend when used in conjunction with Ting's book, especially the disassembler and decompiler. Ting picks the critical words in each of his layers and examines them in detail. For example, in the text interpreter layer the important words are COLD, ABORT, QUIT, and INTERPRET. I spent part of the weekend decompiling these and other words, and studying the resulting code--all it requires is DECOMP COLD or DECOMP ABORT or

DECOMP QUIT or DECOMP INTERPRET. I can also send the code to the printer if I want to study it on the daily train commute.

The text (or outer) interpreter, incidentally, as Ting points out, "is THE operating system in a FORTH computer. It is absolutely essential that the reader understand it completely before proceeding to other sections." COLD invokes the cold start, which then invokes the warm start (called ABORT) which calls QUIT--the endless FORTH loop that reads the terminal input and then calls INTERPRET to execute (or perhaps compile) the text.

I made up the following "crib sheet" of key words in each layer (by chapter numbers) to help me memorize them as fast as possible. You may want to experiment with it by running DECOMP on the various words. If nothing else, it will give you a feel for how the systems layer interfaces with both the development layer and the assembler layer.

- 1
- 2
- 3 (text interpreter)
COLD ABORT QUIT INTERPRET X
- 4 (address interpreter)
NEXT EXECUTE DOCOL ;S
PUSH POP PUT LIT
- 5 (compiler)
[] CREATE CODE : ;
- 6 (error)
?ERROR ERROR (ABORT) MESSAGE
?COMP ?EXEC ?PAIRS ?CSP
?LOADING ?STACK
- 7 (terminal I/O)
EXPECT QUERY WORD TYPE COUNT
-TRAILING ." (.) ID. .LINE
(LINE) LIST
- 8 (number conversion)
HEX OCTAL DECIMAL (NUMBER)
NUMBER <# HOLD # #S SIGN #>
CR SPACE SPACES D.R D. .R
. , ? DUMP
- 9 (dictionary)
HERE ALLOT , C, -FIND VOCABULARY
DEFINITIONS TRAVERSE LFA CFA NFA
PFA LATEST FORGET VLIST
- A (disk memory)
BLOCK +BUF BUFFER R/W UPDATE
EMPTY-BUFFERS DRO DR1 FLUSH LOAD
- B (defining words)
;CODE (;CODE) <BUILDS DOES>
CONSTANT VARIABLE USER
- C (control structures)
COMPILE [COMPILE] BRANCH OBRANCH
IF ENDIF ELSE BEGIN BACK UNTIL
AGAIN WHILE REPEAT DO (DO) I
LEAVE LOOP (LOOP) +LOOP (+LOOP)
- D (editor--not Atari!)
TEXT LINE -MOVE H S D E R P I
CLEAR COPY MATCH -TEXT 2DROP
2DUP 2SWAP TOP #LOCATE #LEAD
#LAG M T L 1LINE FIND DEL
N F B X TILL C

What do all these layers do?

Well, the compiler puts new words in the dictionary.

Extensive error checking is a special feature of fig-FORTH. Type WARN and the text of the error messages will be drawn from the disk. Typing 7 MESSAGE will give you "stack full !".

Terminal input and output depends on the words KEY and EMIT. KEY waits for you to

type a character and then stores its ATASCII value on the stack. For example, KEY <ret> waits for a key press. If you type A, a 65 appears on the stack. If you then type EMIT <ret> an A appears on the screen. QUERY uses EXPECT which uses KEY.

The number conversion words convert numbers from human readable form into machine readable form and vice versa.

The dictionary represents about 90 per cent of all FORTH code. It is important to understand the functions of the name field address (NFA), the link field address (LFA), the code field address (CFA) and the parameter field address (PFA). You might try the following:

```
: CAT ." cat " ;
      ( tick to find PFA )
CAT      ( of CAT )
NFA      ( convert PFA to NFA )
ID. <ret> ( print entry from NFA )
```

which prints the original CAT.

The disk in FORTH behaves as an extension of RAM memory and most of the data transfers take place automatically. When you decide to modify it, you will need to know how it works.

Defining words which define other words are a specialty of FORTH. The programmer can extend the language to define new data structures or new control structures which are practically impossible in any other high level language. For example, you can define a new word

```
: BIRTHDAY <BUILDS , , DOES>
```

```
DUP 2+ @ SWAP @ ;
```

so that 2 12 BIRTHDAY LINCOLN or 2 19 BIRTHDAY WASHINGTON will each create a new definition. When LINCOLN or WASHINGTON is invoked, two numbers will be placed on the stack.

Control structures such as IF...THEN and DO...LOOP must be built within a colon definition because they require BRANCH and OBRANCH for branching and looping, and the use of IMMEDIATE words that can be executed during compilation and thereby include the branches in the definition.

On the editor, Ting offers a valuable comment: "A text editor provides important and extensive examples in using FORTH language to handle texts and strings. It is worthwhile for a serious student of the FORTH language to go through these examples carefully."

Mastery of the systems aspects of FORTH, of course, is not the end. Next come those great Atari features such as player missile graphics, and display list interrupts--all in FORTH, naturally.

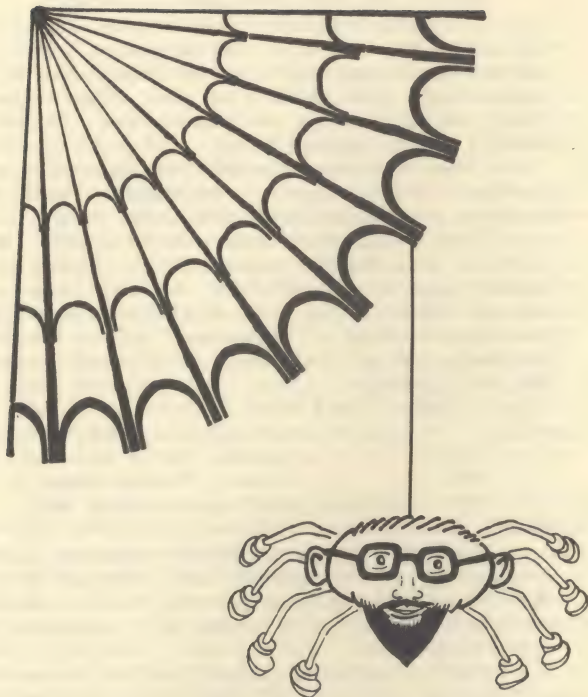
The first thing the ex-Mr. Commodore did when he became Mr. Atari was to fire half the U. S. staff. So you see, it is a race against the clock--and this clock is running fast!

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GIVE A BIT!!!

Contribute to the Newsletter this month.

Atari & TARICON A Betrayal of Trust

by Dick Kushner - JACG

Betrayal: to fail or desert especially in time of need.

Trust: reliance on the character or truth of someone or something.

Atari has violated a trust. The best supporters and salespersons for Atari were the user groups. We demonstrated all the latest software and hardware, ranted and raved to a largely deaf world about the power and ease of use of the Atari computers and guided the new, bedazzled purchasers along the path toward computer literacy. We even endeavored to put on an Atari convention (TARICON). We invited Atari. They accepted. Then, the day before the convention, they declined to come. They wouldn't send a display booth, they wouldn't send hardware or software, they wouldn't even send one person to represent them. JACG sent three people (subsidizing their expenses) who drove 13 hours straight to get there because we felt it was important to make this gesture of support. Atari didn't think enough of the user groups to even make the gesture of being present. Yes, at the last minute, they agreed to donate \$500 to fund part of the convention, but that doesn't cut it, Atari! You blew it! A singularly precious, golden opportunity was lost to support those who right up until the TARICON convention supported you. It is truly time to say, "Jack, enough is enough". My support is gone. I will no longer waste my time or JACG's time pandering to Atari's interests. Am I angry? You're damned right I am!

JACG

...AND WELL WORTH THE WAIT.



"WE'RE NOT READY YET. GO HAVE
ANOTHER SODA CRACKER."

Portland Atari Club

Beyond Armageddon Adventures in Adventuring

by Lord Demofire

Lord Demofire is out a-questing. He will return next month with a review of some new adventures, including Seastalker by Infocom and Jupiter Mission 1999 by Avalon Hill.

ATARI MEETS HEWLETT PACKARD

THE THINKJET PRINTER
by Bob Reeves - JACG

I have had my trusty old Epson MX80 for several years now, and was still on the original ribbon (re-inked several times). I've never had a problem with it, and always figured I would have it as long as I had my Atari. I had been noticing, however, that the speed for personal computer printers has been constantly moving upward, and that my 80 cps was becoming slower and slower by comparison.

About this time, I saw some ads in trade magazines for a brand new personal computer printer from Hewlett Packard, which really aroused my curiosity. I use a lot of HP equipment in my laboratory, and have always thought highly of its quality, although not so highly of its price, which, until recently, has been substantially above what the average home user could afford. Anyhow, this new "THINKJET" printer was advertised as the ultimate personal computer printer, running at 150 cps, and doing it very quietly, while producing nearly letter quality text plus graphics.

My first concern was compatibility, because I have my favorite word processors and graphics dumps that I was not ready to give up, and realized that even if HP tried to be compatible with some popular home computers, it was unlikely that Atari would be on their list (they make that cute little game machine that sells for \$49, right?).

I am happy to report that I was wrong, very wrong, and that HP has come up with a product that will surely capture a large share of the "dot matrix" market, and some of the "daisy wheel" market as well.

Ready for a hot tip? I had trouble getting the following information even from HP distributors, and I really think they should put it in boldface at the top of every ad for this printer, but the THINKJET ink-jet printer has two modes of operation. One is the HP control set (characters that control the special functions like graphics, character width and height, etc.). The other mode is Epson MX80/MX100. When in this mode, the printer responds to commands like it was the old standby, the ever popular Epson!

One of the eight dip switches on the back of the printer selects either HP or alternate mode. Just set it at alternate, and you have a 150 cps, super quiet, high density (11X12 character) matrix Epson printer that works with canned software like Text Wizard, Letter Perfect, Micropainter, Koala, etc. I have tried all my word processors and graphics dumps, and they all work! The print quality, especially in boldface mode, is superior to the Epson, and boldface doesn't slow the printer down one bit. HP claims the print head is good for about 500 pages, and then you just buy another one for \$7.95, and in less than 5 seconds, are back on line. They recommend using HP Ink Jet paper, and it is definitely worth the extra expense. This paper has a shorter fiber length than most, and the result is much darker copy than can be obtained with conventional printer paper. I tried my present printer paper (Jersey Tab Card), Xerox paper, and some fancy bond that I had at home, and the HP paper is really superior. It also has very fine perforations, and doesn't look like "computer

paper" after you tear off the pinfeed holes and separate the sheets. I paid just over \$50 for 2500 sheets. The printer itself retails for \$495, and don't expect a large discount yet, because they're selling faster than HP can (or will) manufacture them, so there's not much incentive to give them away just yet.

The interfaces available at purchase are HPiB, HPIL, or Centronics parallel. You must select one at time of purchase, and HP says they cannot be changed to another type at a later date. Atari users, as well as most personal computer users, will want the Centronics version, which is designated the HP2225C. Right now, HP is only selling through authorized HP distributors, which, unfortunately, do not include the best computer store in the Milky Way, GEMINI. Maybe when supply catches up they will open the market a little more.

In conclusion, if you are thinking of buying your first printer, or of upgrading your present system, I can't say enough about this printer. It is priced for the home user, is fast, is nearly letter quality, is QUIET, does text and graphics, and is compatible with most software written for the Atari. Try it, you'll like it!

LAST MINUTE FLASH With all my playing around with my new toy, I decided that I should order some spare printheads, and discovered that there is a shortage and that they are on allocation. HP agreed to send me one to keep me going, and back ordered the other three. I called distributors everywhere, and nobody has any. The demand for this printer far exceeded their expectations, but they said you should be able to buy all the spare printheads you want in 3 to 4 weeks. Naturally, it is also difficult to find the printer at this time (7/31/84).



Cartoons drawn with Koala Pad, dumped to the HP THINKJET Printer using Koala Converter and Magic Dump. The sketches were made by taping cartoons to the surface of the Koala Pad and tracing them.

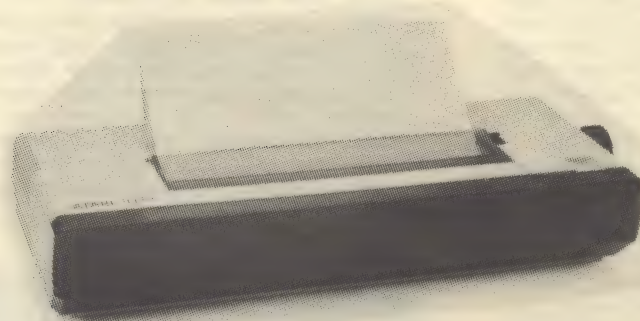
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Sensation

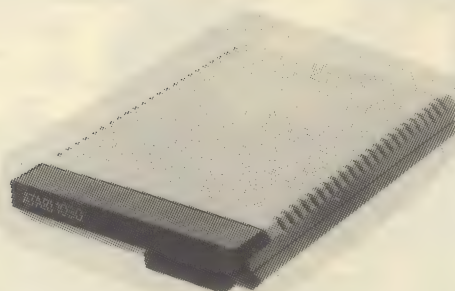


600XL \$ 99.95

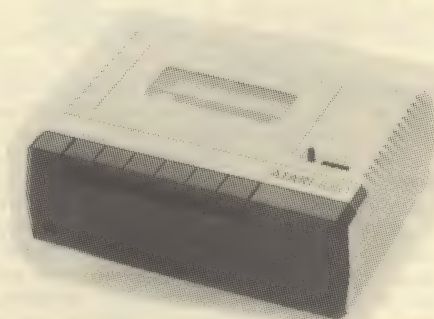
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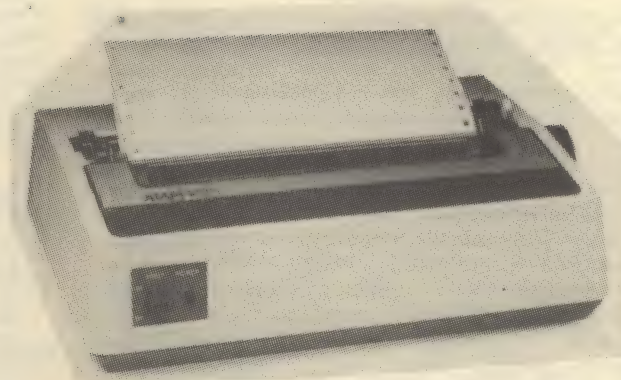
ally Priced



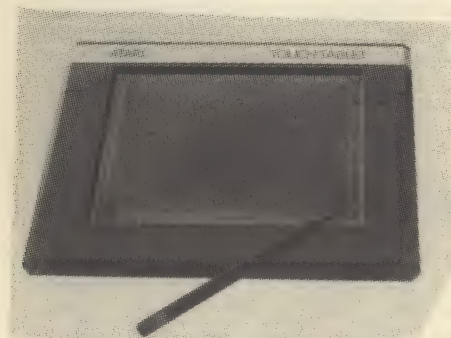
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YOU AND
ARI
DO.

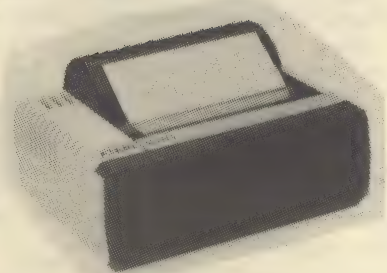
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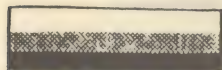


CX77 \$ 49.95
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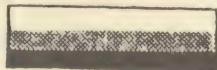


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Getting Down to **BASICs** By Richard Kushner - JACG

After a one month hiatus, I'm now ready to discuss which word processor for the Atari I prefer and why. As a writer and frequent user of a word processor I began by grabbing onto any word processor that appeared for the Atari. I began by using Text Wizard and there was a lot I liked about it. However, as a pretty fast typist, I always had the feeling that Text Wizard was not quite keeping up with me. This was a major annoyance. When Letter Perfect appeared, I tried it out and liked it very much. It kept up with my typing speed and it only annoyed me when I was inserting text, when it consistently managed to drop the first letter or two of the text that it was pushing out of the way to make room for my insertion. Recently, Letter Perfect issued a new version (Version 6), which adds an impressive collection of commands to an already good product.

First off, you can configure Version 6 for either standard 40 column text or you can set it up to work with the Bit-3 or Austin-Franklin 80 column boards. Yes, I know that Austin-Franklin is out of business, but I just so happen to have one of his boards. Thus, I found the new Letter Perfect to be very useful in this regard. While 80 columns is not mandatory for word processing (in fact, I wrote all of Basic Atari BASIC with the 40 column version), it is a nice feature to have, particularly if you need to align columns of numbers or words. This can be a very frustrating experience when you only have a 40 column display.

Next on my list of "likes" regarding Version 6 is the presence of a "built-in" spelling checker. Although you have to give up the ability to add new words to the dictionary, the direct access to the checker is a nice touch. Unfortunately, this checker does not check words of less than three letters. I say this is unfortunate because it is a common typing error to transpose letters and have "do" come out "od", for example.

Printer configuration is also very thoroughly handled. There are tables of the pertinent codes for virtually all printers available. There is even the ability to customize to any proportional sized character set. Although I don't have a printer that has such a set, this clearly would be nice for use with a daisy wheel letter quality printer.

There are more important and useful changes in the new version. If you want to go the end of the text, the command is CTRL+E (for End, of course). In the old version, the text would scroll from where

you were to the end. This could take many seconds if the file was long. The new version goes immediately to the end of the text. Nice! Also, when you go to save a file that you had loaded to modify, the screen displays the name of that file as its default. This means that you can save the file with the same name without having to type in the name. Another nice touch!

Did I forget to mention the manual? LKJ, the makers of Letter Perfect, is renowned for their terrible manuals. The new Letter Perfect has a new manual that goes a long way towards erasing this image. Oh, yes, there are new cursor controls also. You can now move one word right or left (and can also delete one word right or left). You can also move up or down one line, one paragraph or one screen "page". You can "link" files to print a large file that has been saved in pieces, insert your own control codes for special features that your printer has, put in headers and footers, and so on and so on.....

How about dislikes? There are still a few. I'm still not thrilled by the screen appearance when I try to do a long insertion in the middle of some existing text. Even though I understand that the computer has to work hard to move all the following text out of the way, it still annoys me. I also would have like to have seen an "undo" command to take back the last thing done. For example, if I intent to clear the buffer, but hit the wrong key I erase all my text instead. I'd like to be able to take that kind of a mistake back! The problem is that all the delete commands start with CTRL-K followed by a letter that bears some relationship to what it is deleting (for example A for deleting "all After cursor", B for "all Before cursor, etc.)). These commands are not the same as those in the previous versions of Letter Perfect!! So, as a friendly warning, BEWARE THE DEADLY DELETION. If you meant to delete just what was in the buffer, but hit the wrong letter, goodbye to a portion of your text. Yes, I know that you have to confirm your choice, but sometimes the fingers get ahead of the brain.

Another dislike is the use of half-line spacing as the default spacing. I found that with this default I couldn't get pages to format correctly. For example, I would specify "triple spacing" to get three half-lines for line-and-a-half space printing. Yet, the printing kept creeping down the page more on each page instead of retaining uniform top and bottom margins. I presume that this is a bug in the program. Also, half-line spacing slows down the printer. I got around this by simply redefining my default to be the printing of whole line feeds between

lines. Not a fatal bug, but another annoyance. A more major annoyance is that, with two drives and the files stored on Drive #2, the program checks drive #1 after printing a file to see if you want to merge another file with the one just printed. It should, of course, check Drive #2! This is a strange problem, because when you want to save or load or delete a file, Letter Perfect correctly goes to Drive #2.

I haven't mentioned a number of standard word processor capabilities because all word processors have them. Suffice it to say, Letter Perfect has all the features you will need in a word processor. I recommend it highly.

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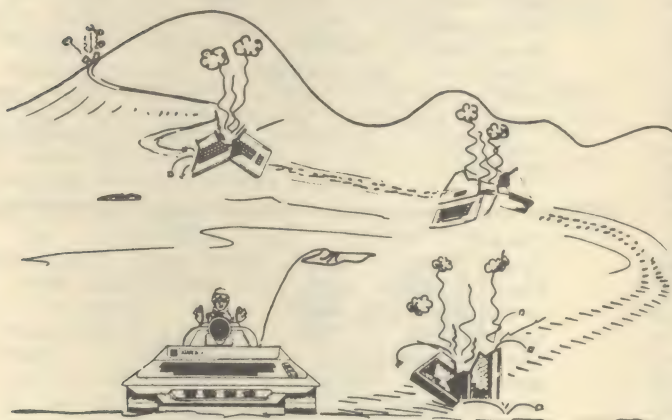
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AUGUST MEETING HIGHLIGHTS

Reported by
Joseph S. Kennedy

Dick Kushner opened the meeting with the following announcements, comments or rumors:

1-The Executive Committee has extended a \$500 loan to Scott Brause for the purchase of a hard disk drive for the bulletin board.

2-The Executive Committee has also made the purchase of Spell Wizard for Scott for the most obvious of reasons.

3-Candidates for offices were solicited for the coming year. The candidates will be announced at the September meeting and voted upon at the October meeting (BE THERE!).

4-The continuing saga of "General Atari" was brought up to date with reports of sightings of Jack Tramiel in New Jersey. Rumor also has it that Atari's staff has just been cut from 300 to 21 (or was that 35 or 16 or... gee aren't rumors fun?).

5-Bylaws are being formulated by the Executive Committee and should be ready in the near future.

The expenditure of \$150 for the travel expenses of Dick Kushner, Art Leyenberger, and Scott Brause to attend Ataricon was approved by the general membership.

Scott Brause reported that the Bulletin Board will be down for about one week until the replacement for the new hard disk comes in. Very shortly there will be two phone lines for the BB. It was suggested that the second line be for members only (great idea!!).

Art Leyenberger, after having dined just the night before with Rod Stewart (did ya' think he was sexy??), reported on the state of Atari:

1-The 7800 will continue.

2-The 5200 is dead.

3-There will be a new machine in '85. Not the "Not the 1450".

4-Atari will no longer market the Syn-series. (Synapse will.)

5-Prices on Atari hardware and software will be going down drastically as Tramiel tries to raise working capital. Art was also able to tell us that Analog Magazine has permitted us to put their programs on the BB and in the library. (Thanks Analog!)

Art gave a favorable review to the Syn-series pointing out as the only major drawback the lack of a report generator in the Synfile+ program. He demoed the Syncalc program and couldn't say enough good things about it.

"Red" Art, that famous Moscovite Atarski writer, demoed the new "Summer Games". After winning the pole vault competition (by default), he made a big splash in platform diving.

Art also demoed "One-on-One" and "Frogger II 3D".

Frank Pazel gave us an enthusiastic review of "Pro*Plus", a program for printing with any number of different fonts on the Prowriter printer. The August Newsletter has some examples of this program's capabilities for those who were not at the meeting.

Books for Atari

by
Manuel Ayres - JACG

In early 1983 there were just a few books on Atari programming. Now, a year later, the scene has changed and we find a lot of books on the subject - so much that one can easily buy the wrong book. Although I will be reviewing many of the books (but not all), I would like to dichotomize them under main areas: reference guides for programmers, and books on programming.

A. Reference Guides

1) "Programmers Reference Guide for the Atari 400/800 Computers" by David L. Heiserman. Publisher: Howard W. Sams & Co., Inc., Indianapolis, IN, \$21.95.

2) "Your Atari Computer" by Lon Poole, et al. Publisher: Osborne/McGraw Hill, \$16.95.

3) "De Re Atari, A Guide To Effective Programming" by Chris Crawford, et al. Publisher, APX (loose leaf), \$21.00.

B. Books on Atari Programming

1) "Atari Basic" by Bob Albrecht, LeRoy Finkel, and Jerald R. Brown. Publisher: Wiley, 1979, \$12.95.

2) "Atari Basic" by Richard Haskell Ph.D. Publisher: Prentice-Hall, \$13.95.

3) "Programming Your Atari Computer" by Mark Thompson. Publisher: TAB, \$16.95.

4) "Atari Programming with 55 Programs" by Linda Schreiber. Publisher: TAB, \$21.95.

Let me begin the review with a brief comment on publishers and authors. Generally, reputable publishers are quality conscious. They endeavor to make sure that their book becomes the choice book in the field, especially for reference works. Howard W. Sams & Co. has produced several excellent books in the field of computers. "CP/M Bible", "Soul of CP/M", and "Commodore 64 Programmer's Reference Guide" are some of the outstanding books published by Sams which should be on the bookshelf of every programmer involved in that particular field.

What can be said of publishers also holds true of authors. Authors become famous by the quality of their books. David L. Heiserman is a prolific writer. He is the author of "Pascal", "Miniprocessors", "Radio Astronomy for the Amateur", "Build Your Own Working Robot", "How to Design and Build Your Own Custom TV Games", "How to Build Your Own Self-programming Robot" (all published by TAB), etc.

Heiserman's book is exactly what the author entitles it - "Programmer's Reference Guide." Formatted like the "Commodore 64 Programmer's Reference Guide" (pub.: Sams), Heiserman's Guide fills a

real void for Atari computer owners. Each and every command is defined, complete with the syntax, semantics, and parameters. It includes areas not covered in other books, is complete and comprehensive. It is well organized. Last, but not least, you can keep the book flat open and input data easily because of the spiral binding. It is the best buy for all levels of Atari owners/programmers.

Lon Poole's Guide is the next best comprehensive book for Atari owners. It covers all the aspects. Perhaps in a subsequent edition the authors will amplify on commands such as XIO, to which less than a page has been devoted. It is identified only as a fill command. In sharp contradistinction, Heiserman's Guide explains this little known or used super-command over eight pages. Poole's book was next on the scene after "De Re Atari" and it was a vast improvement. It gave all the necessary information in a concise manner, as a guide should.

I rate "De Re Atari" below the other two guides since it is not meant for the average JACG member. It is written as a training manual for professional programmers, although it does not supplant the Atari technical reference manual. It is a tutorial for the machine language programmer who wants to write the next hit arcade game. It is loose leaf, but cellophane wrapped so you can not look before you buy. But if all you want to do with your Atari is Player Missile Graphics, Display List Interrupts, and Coarse or Fine Scrolling forget all that you read in the foregoing paragraphs and read no further; just buy "De Re Ataricus", (Latin for All About Atari).

Commodore, simultaneously with the introduction of the Commodore 64, made available a Programmer's Reference Guide (pub.: Sams). Atari did not have any such guide, except for "De Re Atari", and the "Atari Technical Reference Manual" (#C016555), both of which were not easily available. Instead, they included in the Programmer's Pack an excellent basic programming book - "Atari BASIC" by Albrecht. Subsequently, they replaced the book with Bill Carris' "Inside Atari BASIC" (pub.: Reston), which, as the sub-title indicates, is "a Fast, Fun, and Friendly Approach."

Of the four Atari programming books, "Atari BASIC" by Albrecht, et al (pub.: Wiley) is the best buy. The authors have written excellent BASIC and Data Base programming books for several other computers. They have followed a step-by-step (programmed learning) approach. Theory is set forth first, and is followed by questions, frame by frame, to make sure you understand it. If you have not, you can peek at the answers, although it is better to go back and read the theory all over again. That, of course, is the right way to become a programmer. A beginner, with a little diligence, can learn to write meaningful programs, modify programs to suit his needs, and appreciate the programming

techniques of the experienced programmer. This is almost a text book and brought out by the excellent publishing firm of John Wiley & Sons. Their series in the various sciences are the best texts available. In my opinion, this book and Heiserman's Guide should be on the bookshelf of every Atari owner.

Dr. Haskell is the author of several BASIC computer books, including books for Apple, TRS, and Pet/CBM. His book is the next best and would appeal to those who do not need the step-by-step approach. His book gradually takes you from the keyboard to PEEK and POKE. There are also several useful programs for the high school student.

Thompson's book explains fundamental microprocessor techniques, but is not as comprehensive as Haskell's book. Many would consider his first four chapters a bit too technical, and may not want to go further. An unique feature in this book is that it deals with the disk operating system exhaustively, as is normally done only in a reference guide or an ad hoc publication. His book has a lot of useful information, and has the best appendices of the four in this group.

Schreiber's book is for those who just want hands-on experience. You are taken through the various lines of several programs with explanations. There is very little theory. For those who do not wish to key in the programs a disk with all those programs is available.

Although books are useful to accumulate knowledge, they can not do an adequate job in the field of computers where it is increasing per second per second. It is not economical to update the books every year with a revised edition. As such, some may prefer to buy the Compute! series of books such as "Mapping the Atari", "Atari Graphics", etc. The various articles appearing in Compute! are nicely edited and properly concatenated in their series. Although Creative Computing has published a similar volume, you are better off with the Compute! series.

The New York Public Library has many of these books in their collection. You may want to borrow them for a week or two, browse through them at your leisure, and decide on your final choice.



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TRACING COLON DEFINITIONS
by Donald Forbes - JACG

If you never encountered "fig stew" you might enjoy a taste of it.

It is the custom at FORTH chapter meetings to distribute source code contributed by members of other chapters, a sort of round robin. Here is an interesting debugging tool that tells you what happens when you execute a word that you have just created. You also gain an insight into the workings of the master loop of the FORTH operating system--the endless loop called QUIT which calls INTERPRET which will then execute (or compile) the terminal text.

The author is unknown to me. He did not attach his name to his paper. I have chosen to call him Student. If you wonder at the choice of name, I can only remind you of your early days in your statistics courses where you encountered the "Student's t" distribution used in a sampling distribution when N is small, say less than 20. This "t" statistic, as you recall, may be found in "New Tables for Testing the Significance of Observations" by "Student," Metron, Vol. V, No. 3 (1925), pages 114-118.

"Student" became an immortal name in statistics but does a great injustice to the statistician William Sealy Gosset 1876-1937 who worked for the Guinness Brewery in Dublin (you have no doubt tasted their stout) and who forbade him to use his own name in his research papers.

If the new Student steps forward, I will be only too glad to give him credit.

Here is Student's text. It will work with your JACG disk #19 because I just finished testing it. It will also work with valFORTH if you have it.

"This paper presents a simple way of getting in and looking at what happens when you execute a word. It is a last resort measure when all else fails and you just can't understand the funny numbers you are getting. It is complementary to the method suggested by Paul van der Eijk. His method allowed you to trace all occurrences of a

given word, such as `?`, whenever they occurred. This method allowed you to trace all the words at the first level, which is a definition of a given word. For methods have their place.

"The way to trace every word in a definition is to modify the compiler so that after each word is compiled, a call to the trace routine is inserted. In other languages, this would be a major undertaking, requiring many person months of effort to change the compiler. I added it to FORTH in one night.

"The two words that have to be changed, or added, are new versions of `QUIT` and `INTERPRET`. The new version of `QUIT` is the same as the old, except that it calls the new `INTERPRET` instead of the old. The new `INTERPRET` is also much like the old but, after storing a CFA, it also stores the CFA of a trace routine, if tracing is wanted. The exact trace routine is a matter of taste, and also somewhat system dependent. The listed trace routine should work with a fig system which addresses by bytes and which increments IP before calling a word. (The constants 2, 2+ and the sequence R 4 - @ 2+ NFA ID, which prints out the name of the word last executed are machine dependent sections.) The word `?TERMINAL`, which tests whether a key has been pressed, is also nonstandard.

"Tracing is invoked by first executing `NQUIT`. This puts you in a new master loop. Any word compiled now, if `TRACE` is nonzero, will have tracing in it. The trace line has the stack pointer, the contents of the top of the stack, the address of the last word executed, and the name of that word. If the user hits a key, then FORTH suspends, to allow the user to look at the history before it rolls off the screen. If the user then hits a key, FORTH continues, unless the key hit is escape (ASCII 27). If the key is escape, then the system aborts, so that you can get out of hopeless definitions.

"Acknowledgments: I want to thank Jack Heller for suggesting this approach to tracing, instead of my previous, rather impractical approach. Reference: van der Eijk, Paul: "Tracing Colon Definitions," FORTH Dimensions Vol III No. 2, (July/August 1981), p. 53.

And there you have his story. Here is the source code to make it work.

```

ETR # 1
0 ( tracing colon definitions)
1 1 VARIABLE TRACE
2 : OUTX BASE @ HEX SWAP 6 .R
3 SPACE BASE ! ;
4 : TRACE.SUB CR SP@ OUTX
5 SP@ 2 - @ OUTX R OUTX
6 R 4 - @ 2+ NFA ID.
7 ?TERMINAL IF KEY 27 =
8 IF ABORT THEN THEN ;
9 : NINTERPRET BEGIN -FIND
10 IF STATE @ < IF CFA , TRACE @
11 IF ' TRACE.SUB CFA , THEN
12 ELSE CFA EXECUTE THEN ?STACK
13 ELSE HERE NUMBER DPL @ 1+
14 IF [COMPILE] DLITERAL ELSE
15 DROP [COMPILE] LITERAL THEN
16 ?STACK THEN AGAIN ;
17 : NQUIT ( run with tracing ) 0
18 BLK ! [COMPILE] [ BEGIN RP! CR
19 QUERY NINTERPRET STATE @ 0= IF
20 ." OK" THEN AGAIN ; ;S

```

To run a test, type `NQUIT`. Then you can create the following sample definition--

```

: TEST 125 EMIT 5 5 POS. 5 0 DO
." CAT " LOOP ;

```

Notice that the `OK` comes out in upper case instead of lower case (because you changed it). Now when you execute `TEST` you should get something like--

```

EC EA 5D7C EMIT
EC EA 5D88 POS.
E8 E6 5D90 0 CAT CAT CAT CAT
CAT OK

```

Even if you never want to use this program as a debugging tool, you may find it instructive to compare it with the normal `QUIT` and `INTERPRET` code that you get from running `DECOMP QUIT` or `DECOMP INTERPRET`.

One of the beauties of FORTH is that you own the computer and you own the software, to do with as you please. This simple program serves as a good illustration. So if you enjoy the taste of "fig stew" ... there's lots more where this came from!



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```

*****
*****
***
*** ***** ***
*** ***** ***** ***
*** ** ** ** ** ***
*** ** ** **   ***
*** ** ** **   ***
*** ** ** **   ***
*** ***** **   ***
*** ** ** **   ***
***
***
*** BULLETIN BOARD ***
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***
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*****
*****

```

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PLU-PERFECT by Dick Reaser

I've decided to start this regular(?) column to share some of the experiences I've had and heard about with regard to the LJK series of programs: Letter Perfect, Spell Perfect and Data Perfect. The idea for the column came from reading JACG's Hank Hirschfeld who is writing a column entitled "Perfecting Data Perfect".

I must tell you about my most recent success story. I keep the WLAUG exchange newsletter records on Data Perfect. A couple of months ago this data-base began acting up. Although I could add records, delete records, print labels and reports; I was unable to compact, sort, or merge into Letter Perfect or into another Data Perfect database.

After many attempts I was unable to resolve the problem. In desperation I finally sent the data disk to LJK and they were kind enough to compact and re-sort the files and return the disk to me. Guess what, I was still unable to do those same functions above!!!

I then used a disk editor (Archiver/Editor) to look at how the records were stored on the disk with the hope of being able to somehow get an inkling as to what was going on. I compared perfectly working databases to the faulty one. What I found was that the records on the ok disks were all contiguous, sector after sector. LJK apparently doesn't use the last few bytes of each sector to point to the next sector with data on it as ATARI dos purports to do. The faulty disk had a string of "Hearts" (hex 00) every once in a while. There was information on several of the other sectors that didn't make much sense to me so I was unable to play with those areas.

How to get rid of the hearts?? I used the disk editor and replaced all the "Hearts" with the letter "e" (hex 65). I suppose I could have used any normal character, such as an asterisk. This, of course, screwed up the sequence as to what data was supposed to be in which field.

Another newsletter to the rescue!!

I used a program by Norm Draper of "DAL-ACE" that I found reprinted in "CURRENT NOTES" to convert the file to an ATARI DOS file. (Norm Draper's single and double disk versions are now in the club disk library as DP2AT1DR & DP2AT2DR respectively).

Then I used the LJK File Utility to convert this into a Letter Perfect file. I used Letter Perfect to edit out the extra "e"'s and make sure that there was correct data in the correct sequence in the Letter Perfect file. I thought that I then would have to convert back to ATARI dos in order to "merge" the data back into the data-base, but I decided that I would try directly from the Letter Perfect file. It worked!!

For some reason, I had to change the data-base name extension from LP to DB the two places it occurred on track 14 or 15 using the disk editor. Interestingly enough Data Perfect didn't seem to care about the LP extender and worked fine by itself. It didn't cause any trouble until I tried to do a "Data Base Merge" into Letter Perfect for a form letter I was working on. It's possible that the LP extension got there from one of my earlier trials. (I didn't keep a very good log of my frustrations).

In looking back, I suspect that after changing the hearts, I probably could have changed the directory title extensions from DB to LP and it would have loaded into Letter Perfect without going through the conversion to ATARI dos and back. The first time I tried this doing that, only the first couple of records would transfer. (That was before I decided to change the "Hearts" into a regular character). I'll leave verification of this hypothesis as an "exercise for the student".

I am just thrilled that I was able to get the data-base to work again instead of re-typing all that data again. Total "keyboard time" may have been longer but it's more fun for me to edit and learn than to just type. If you have a Data Perfect data-base with similar symptoms, give this technique a try. It could really "Make your Day" as Clint Eastwood would say.

My current project is to use Letter Perfect to do some dot graphics with my daisy wheel printer. That way I can make up some custom letter heads and stuff like that. Hope to give the results next time. Have to con the newsletter editor to use the copy directly from my printer to illustrate the effect. (He only has a Dot Matrix printer and is protective of the newsletter format ... besides, he only speaks "Atari Writer")

The reason you can read this is that, although it was composed using Letter Perfect, I used the LJK File Utility to convert it to an ATARI DOS file which the editor can read with Atari Writer. He doesn't like to re-type any more than I do which is the reason that my income tax article ended up in the wastebasket. Experiments indicate that, at least, the centering of text command is compatible between the two word processors and the two printers. I'm not too sure about:

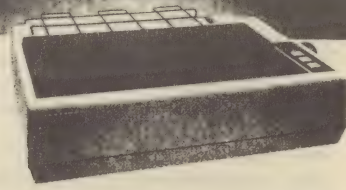
Please send me any information you wish to share with others about the "Perfect" programs and I'll include it in this column. (My address is: 5611 Sherbourne Drive, Los Angeles, CA, 90056) You're certainly also welcome to submit articles directly to the Editor. I'll slip in excerpts of articles from other newsletters too as I gather them up.

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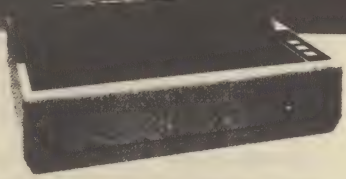
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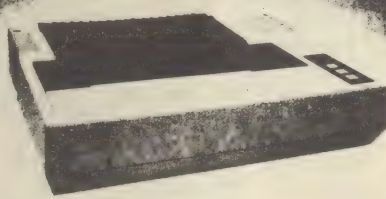
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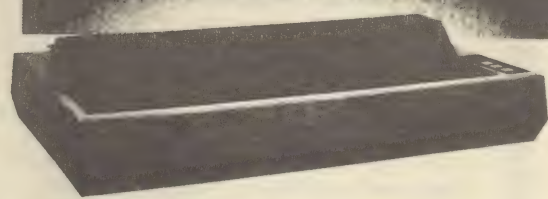
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CELLULAR AUTOMATA

or
Mutant Spawn of the Space Invaders

by Kirk McDonald - JACG

The Aliens eventually grow weary of the frustration of attacking Earth in suicide waves. Our defense is too effective, thanks to you, Jersey Atarians. But before the Aliens withdraw they conceive of a new form of assault, a kind of genetic roulette. Their mother ship emits a cloud of spores which obey a primitive genetic code as to how each new generation will arise from the previous. Due to the vigorous counter-attack from Earth the Aliens are forced to depart before their genetic engineering is complete. Even the Aliens don't know which codes produce spores that may someday grow into new breeds of super-Aliens, or those that die a lonely death in the cold of space. Or that grow uncontrollably turning the universe into a sort of Sargasso Sea inhospitable to Aliens and Earthlings alike. To provide counter-measures against these mutant spawn of the Space Invaders we must explore the significance of the Aliens' genetic codes to determine which are malignant, or benign.....

If you wish, you might just type in the listing at the end of the article and run it. Follow the prompts to enter several parameters and watch the patterns fill the screen (slowly). The Action! program discussed below runs about 300 times faster, filling the screen with 80 generations of spores in 2 seconds. It also offers a printer dump if you find an interesting specimen you wish to preserve. The 4 Figures are examples of spore growth which may be studied with these programs.

As the Action! program listing is rather lengthy it has been made available as file AUTOM.ACT on a J.A.C.G. library diskette. Check with the disk librarian to see where it is located. You must have an Action! language cartridge and an 800 or 800XL computer to run this program. The library diskette also includes a text file AUTOM.DOC which can be read by the Action! editor, and reviews the menu options of the Action! program in case they are not self-explanatory. The printer dump is written for the Epson FX-80 which has the capability of user-defined character sets which speed up the screen dump.

The programs will allow you to investigate an interesting conjecture by Stephen Wolfram of the Institute for Advanced Study at Princeton, N.J. He suggests that there are 4 general types of growth patterns of the spores, only one of which produces the super-Aliens. But even from a random initial configuration of the spores there can arise complex, self-replicating structures. See Figure 2. The implications of this phenomenon are little understood, but seem rather provocative. With the help of your Atari computer prepare to explore a new frontier of knowledge!

The remainder of this article is a somewhat technical exposition of the idea behind the genetic codes of the mutant spores, the so-called cellular automata. These are prescriptions of how each succeeding generation of spores is related to the previous generation. Along with others I have found surprising esthetic and mathematical appeal in these simple devices. The concepts of cellular automata are presented in the March 1984 issue of Scientific American, and in much greater detail in the January 1984 issue of Physica D (Nonlinear Phenomena) which you might find at the physics department library of a university.

We picture a generation of spores as a line of cells each of which may or may not be occupied by a spore. In the Basic version there is only one kind of spore but in the Action! program there can be up to 3 types, shown on your screen in different colors. For the case of one type of spore a generation can be represented as a binary number:

...10011101010001....

A 1 indicates the presence of a spore in a cell. The genetic code governing the growth of the spores is based on the contents of each group of n adjacent cells, called the parents. In the Basic program $n = 5$, while $n = 3, 5$ or 7 in the Action! program. The code determines the occupant of one cell, called the daughter, in the next generation. The daughter cell is located below the center of the group of parent cells.

The case of 3 parents and only one type of spore is the simplest. There are 8 possible variations of the contents of the 3 parent cells:

111 110 101 100 011 010 001 000.

The genetic code, or automaton, consists of 8 digits, each corresponding to one of the 8 possible groups of parent cells. Each digit takes on a value of 0 or 1 indicating whether in the next generation the daughter cell is empty or has a new spore. That is, if the contents of the parent cells are of the i th type in the list above then refer to the i th digit of the automaton code to learn the fate of the daughter cell. This algorithm is applied to all possible groups of 3 adjacent cells when going from one generation to the next.

An automaton that I find amusing can be written

01001001

meaning that only if the parent cell group is 110, 011, or 000 will there be a spore in the next generation. Applying the automaton to the generation of spores shown in the preceding paragraph we show the next generation as a binary number on the next line, and so on for succeeding generations:

...1001110101001...
....00101000000....
.....000001111.....
.....1110100.....
.....01000.....
.....001.....
.....0.....

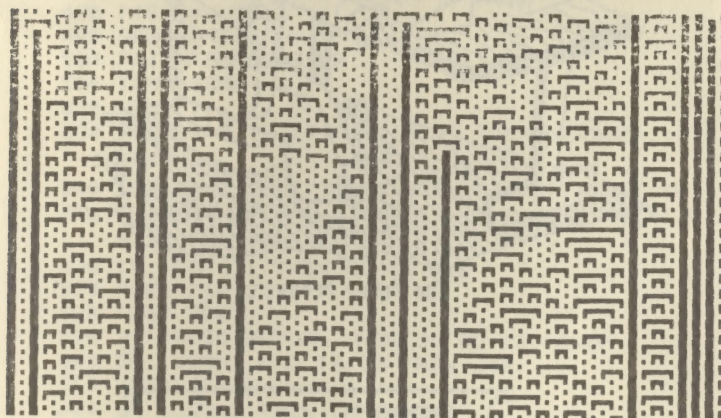
In this example each generation has 2 fewer cells than the previous, due to "edge effects". The crafty Aliens circumvented this problem by creating a special class of immutable spores which are placed on the ends of the string of cells. Taking into account this feature the 7 generations of spores shown above would now be:

```
1001110101001
1001010000001
1000000111101
1011110101001
1010100000001
1000001111101
1011101001001
..etc..
```

As one masters the concept of the automaton the conclusion is soon reached that calculating the generations is an excellent job for the computer. Figure 1 shows a printer dump of 80 generations of spores calculated with the automaton discussed above. The field of spores is 160 cells wide. The program uses the GRAPHICS 6 memory as storage for the spores, which sets the field limits as stated. The computer can of course calculate an arbitrary number of generations, and a scrolling display is available in the Action! version so that you can determine the fate of the cellular universe. In the Basic program you can continue for as many screens of 80 generations as you wish.

GENERATIONS = 80, PARENTS = 5, CHILDREN = 2, SEEDS =

167 151 145 139 133 127 121 115 109 103 97 91 85 79 73 67 61 55 49 43 37 31 25 19 13 7 1



You can readily verify that there are 2 to the (2 to the 3rd) = 256 different possible automata for the case of 1 kind of spore and a 3 cell code. But in the general case of k kinds of spores and an n cell code there are k+1 to the (k+1 to the nth) = lots of different codes. An important insight was given by Stephen Wolfram. He claims that representatives of all 4 general classes of automata can be produced by a simpler rule than that given above. Namely, for n parents just add up the contents of the n cells, yielding a number between 0 and n*k. For each of these sums, the automaton tells us what kind of spore if any will populate the daughter cell in the next generation. Wolfram calls such automata "totalistic" in that they are based only on the total number of spores in

the parent cells, and not on the distribution of spores within those cells. The example of an automaton given in the preceding paragraph is not totalistic, although personally I find it quite interesting.

The Basic program appended to this article can calculate all 64 types of totalistic automata for 1 kind of spore with 5 parent cells. The most "interesting" automaton is given by the code

20(decimal) = 010100(binary).

The interpretation of this totalistic code is different than for the general case discussed several paragraphs above. The digits in the binary form of this code, from right to left, correspond to the sum of the spores in the parent cells being 0, 1, 2, 3, 4 or 5 and indicate what the daughter cell will contain. Hence only if the sum of the 5 cells is 2 or 4 will there be a spore in the next generation. If we apply this automaton to the initial generation of spores listed above the result would be:

```
1001110101001
1000010011101
1000001000101
1000000010101
1000000011001
1000000111001
1000001000001
1000000000001
..etc..
```

All subsequent generations will be the same as the last shown. Note that to allow for "edge effects" the first 2 and last 2 cells never change state.

AUTOMATON = 010100, PARENTS = 5, CHILDREN = 2, SEEDS =

167 43 190 183 99 90 87 242 75 236 234 127 185 150 109 226 106 140 219 1

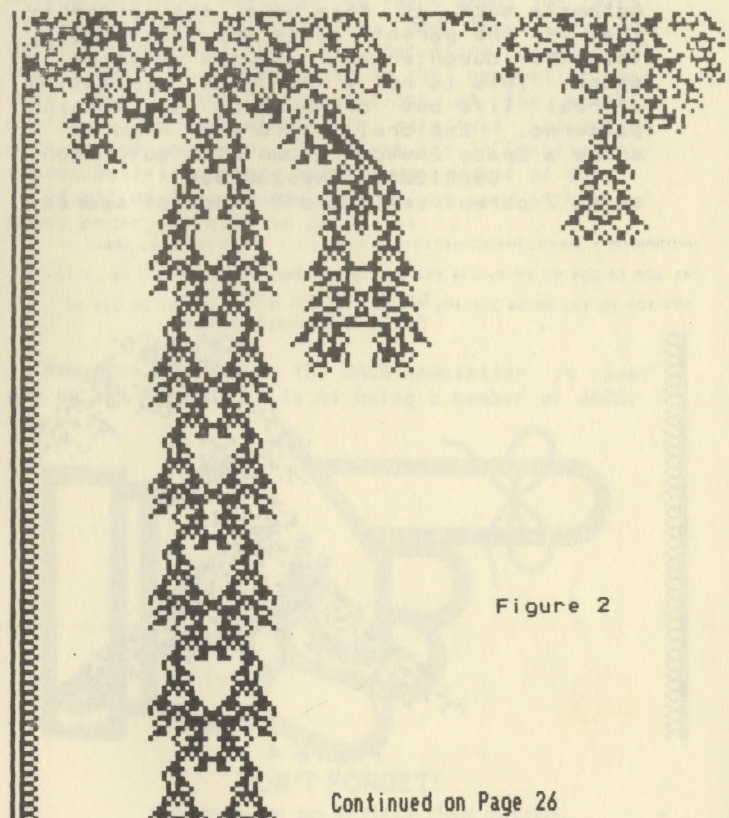


Figure 2

Continued on Page 26

Figure 2 shows a printer dump (not available in the Basic program) of the totalistic automaton

20 = 010100

for a random set of 160 cells in the first generation. Out of the random initial state we see 2 almost successful growths of new Aliens, and one rather awesome Alien with the disturbing property of reproducing itself every 23 generations. This behavior lies somewhere in the conceptual region between complete chaos on one hand, and trivial order on the other. It is believed that this automaton is the simplest structure having this subjective property, which is causing some excitement even outside the computer community.

AUTOMATON = 101001, PARENTS = 5, COLORS = 2, SEEDS =

20 192 143 18 244 46 62 239 247 234 189 1 63 177 32 5 200 93 252 211

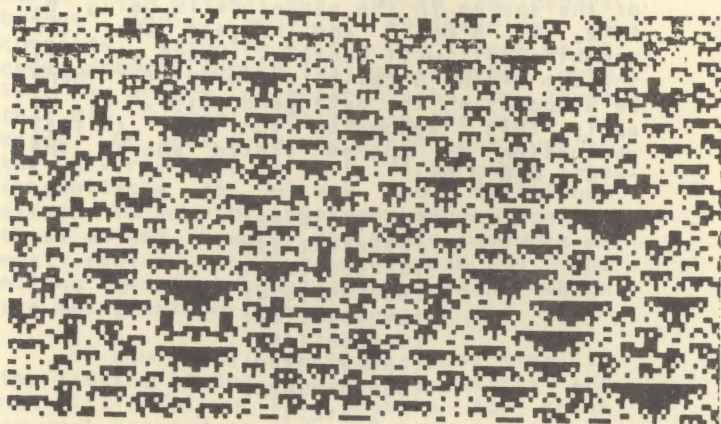


Figure 3

Figure 3 shows another automaton which can be calculated with the Basic program, using code

41 = 101001.

Automata such as this have the property that if the parent cells are all empty, then the daughter cell always contains a spore. This is not a very good simulation of real life but often leads to amusing patterns. Explore, explore! Figure 4 shows a Space Invader grown with automaton

0000123002130012300000

using 7 parent cells and 3 kinds of spores.

AUTOMATON = 0000123002130012300000, PARENTS = 7, COLORS = 4, SEEDS =

41 224 13 204 92 19 35 238 143 167 78 237 225 50 240 163 150 26 21 134

193 123 15 167 88 26 231 196 214 193 146 103 8 72 1 86 133 28 245 59

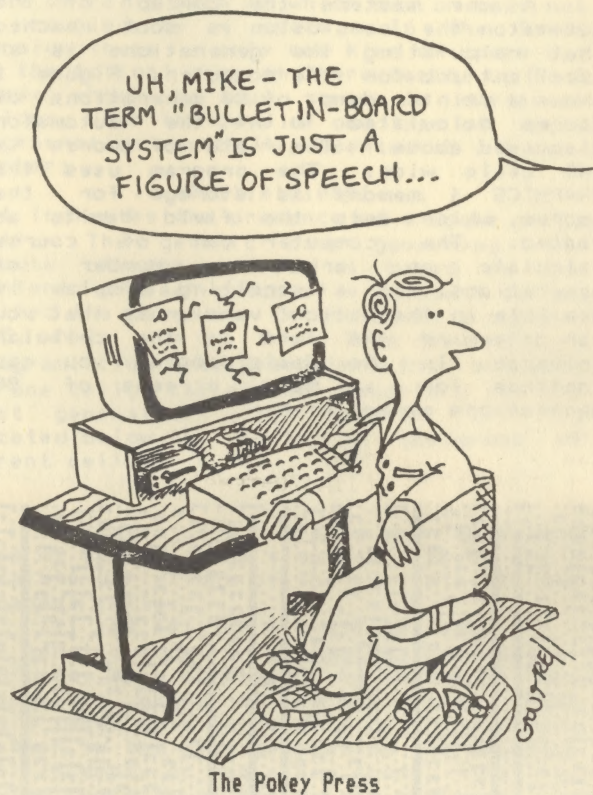


Figure 4

Can such automata tell us something about the origin of life? Could life, rather than Alien death, be transmitted through space via spores with such primitive genetic codes? These questions are not the usual stuff of computer games, but your "games" computer may help answer them. Perhaps at least you have caught the "bug" of cellular automata!

Looking at cellular automata from another perspective, we face the down-to-earth question: Is there a growth on the wallpaper?

Continued on Page 27



The Pokey Press




```

10 REM AUTOM.BAS
20 REM BY KIRK MCDONALD J.A.C.G.
30 DIM A(19),B$(99),C(159),D(159),F(5)
40 DIM R$(1),CC$(1),AA$(1),E$(1),W$(1)
50 R$="R":CC$="C":AA$="A":E$="E"
60 GOTO 380
100 FOR I=0 TO 159:C(I)=D(I):NEXT I
110 ITOT=C(0)+C(1)+C(2)+C(3)+C(4)
120 D(2)=F(ITOT)
130 FOR I=3 TO 157:ITOT=ITOT-C(I-3)+C(I+2):
    D(I)=F(ITOT):NEXT I
140 J=-1
150 FOR IC=0 TO 19:TEMP=0:J=J+8:RESTORE
160 FOR K=0 TO 7:I=J-K:READ SEMP
170 IF D(I)=1 THEN TEMP=TEMP+SEMP
180 NEXT K
190 POKE JPT+IC,TEMP
200 NEXT IC
210 RETURN
220 DATA 1,2,4,8,16,32,64,128
300 J=-1
310 FOR IC=0 TO 19:TEMP=A(IC):J=J+8
320 FOR K=0 TO 7:I=J-K:SEMP=INT(TEMP/2):
    D(I)=TEMP-2*SEMP:TEMP=SEMP:NEXT K
330 NEXT IC
340 RETURN
380 GRAPHICS 6:SETCOLOR 4,0,14:SETCOLOR 0,0,0
390 SCR=PEEK(88)+256*PEEK(89)
400 ICON=0:IR=79
410 ON ICON GOTO 550,540
420 ? "CHOOSE AUTOMATON # FROM 0 TO 63 ";
430 TRAP 460
440 INPUT AUTO
450 IF AUTO<-1 AND AUTO<64 THEN 470
460 ? "TRY AGAIN":GOTO 420
470 TEMP=INT(AUTO):AUTO=TEMP
480 FOR I=0 TO 5
490 SEMP=INT(TEMP/2)
500 F(I)=TEMP-2*SEMP
510 TEMP=SEMP
520 NEXT I
530 FOR IC=0 TO 19:A(IC)=INT(255*RND(DUM)):
    NEXT IC
540 FOR IC=0 TO 19:POKE SCR+IC,A(IC):NEXT IC
550 ? "AUTOMATON = ";AUTO;" (" ;F(5);F(4);F(3);
    F(2);F(1);F(0);")"
560 IF ICON<>1 THEN GOSUB 300
570 POKE 764,255
580 TRAP 700
590 ? "PRESS RETURN ONCE TO GO TO MENU"
600 IF ICON=1 AND IR<79 THEN 640
610 JPT=SCR:IRMIN=1
620 IF ICON=1 THEN IRMIN=0
630 FOR IR=IRMIN TO 79
640 IF IR>0 THEN JPT=JPT+20
650 GOSUB 100
660 KEY=PEEK(764)
670 IF KEY<255 THEN INPUT B$:GOTO 700
680 NEXT IR
700 ? "RERUN=R, CONTINUE=C,"
710 ? "NEW AUTOMATON=A, END=E ";
740 TRAP 800
750 INPUT W$
760 IF W$=R$ THEN ICON=2:GOTO 840
770 IF W$=CC$ THEN ICON=1:GOTO 830
780 IF W$=AA$ THEN ICON=0:GOTO 840
790 IF W$=E$ THEN 900
800 ? "TRY AGAIN":GOTO 700
830 IF IR<79 THEN 410
840 FOR I=0 TO 1599:POKE SCR+I,0:NEXT I
850 GOTO 410
900 GRAPHICS 0
910 END

```

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Trading Post is a service for JACG members who wish to sell or swap items of any type. There is no charge for this service. Material must reach the Editor by the 20th of the month to be considered for inclusion in the following month's Trading Post. No commercial services or items will be accepted.

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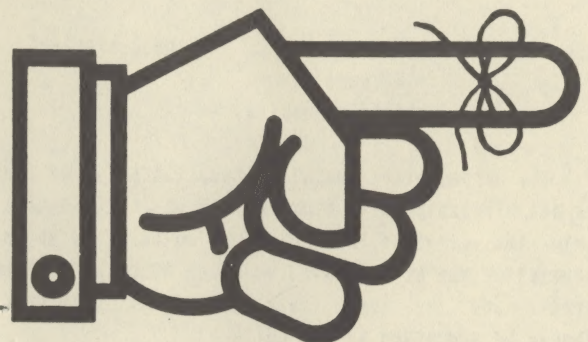
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